

Group of Objects

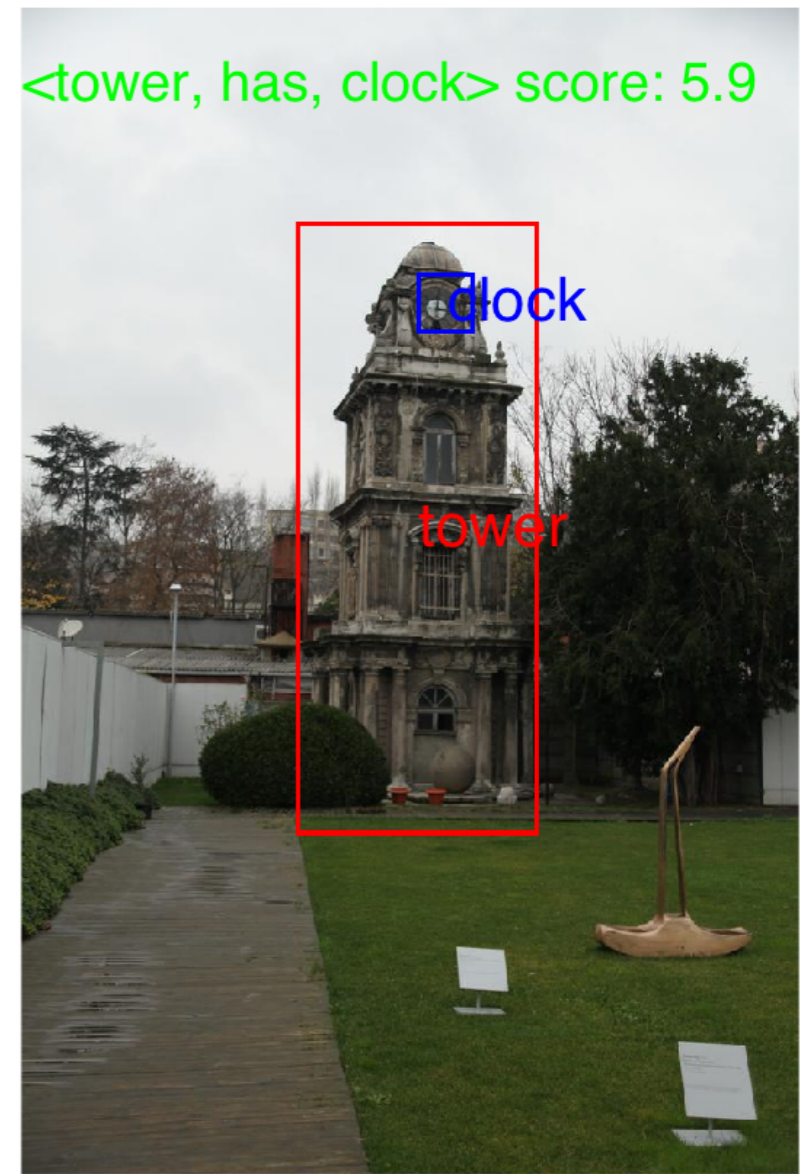
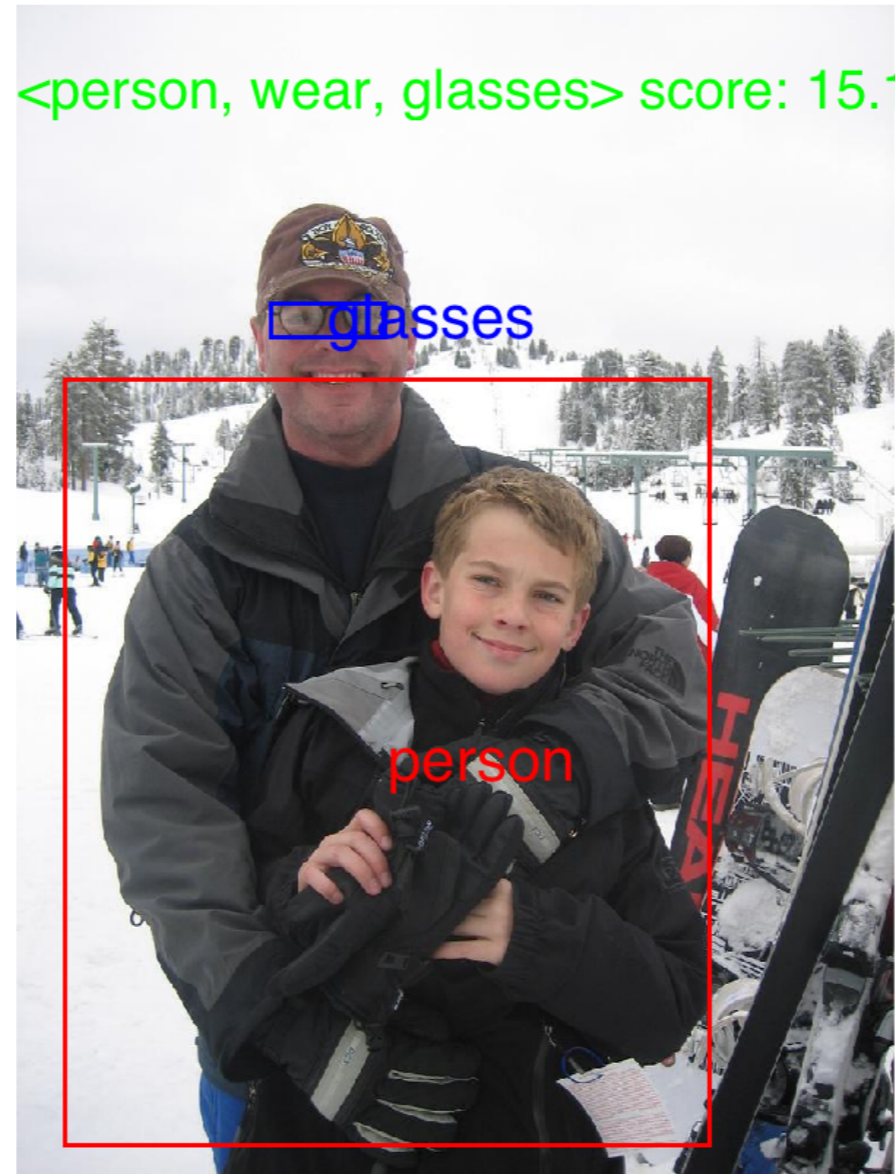
Experiment Presentation: Yousi Lin

Visual relationship detection with language priors

C Lu, R Krishna, M Bernstein, L Fei-Fei
ECCV2016

- This paper proposed a model that can train visual models for objects and predicates individually and later combines them together to predict multiple relationships per image.
- Their model can scale to predict thousands of types of relationships from a few examples.

Result images



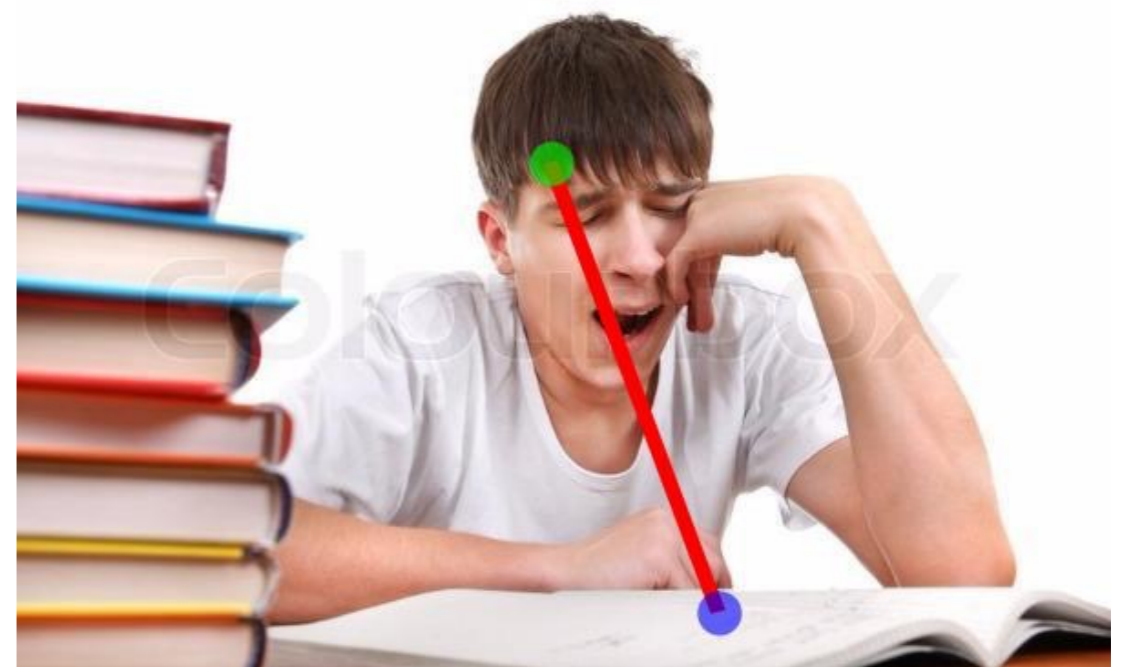
Where are they looking?

Adrià Recasens*, Aditya Khosla*, Carl Vondrick, Antonio Torralba
NIPS 2015

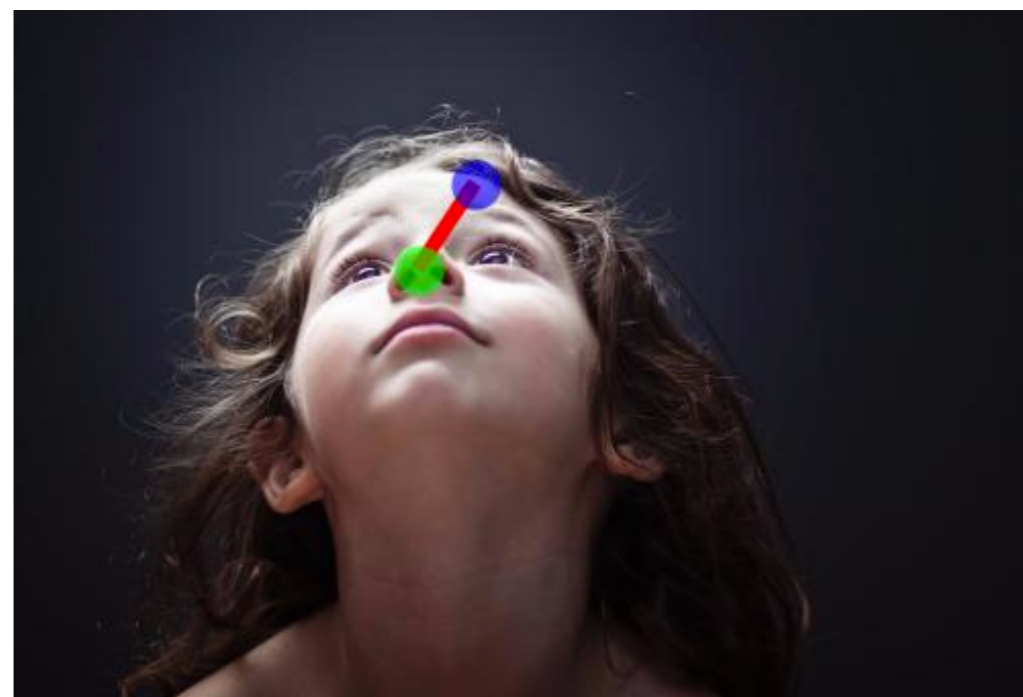
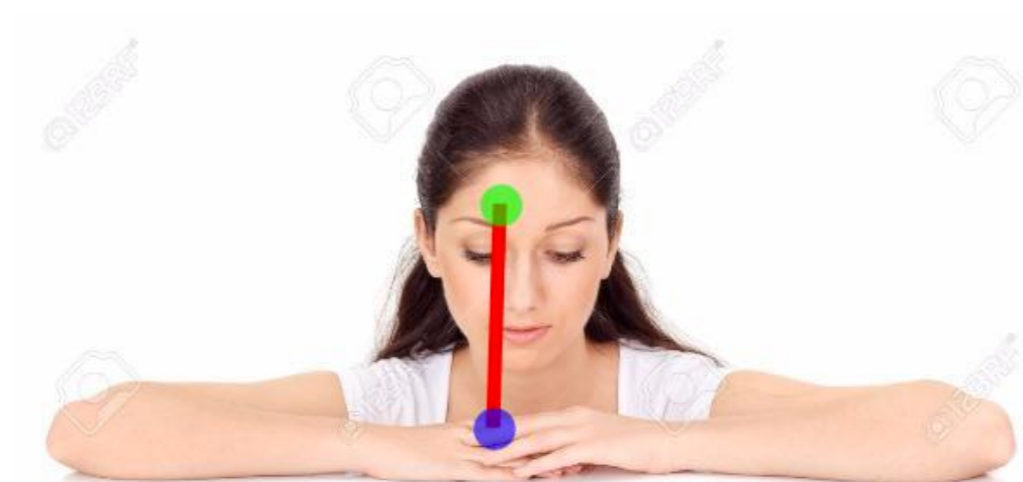
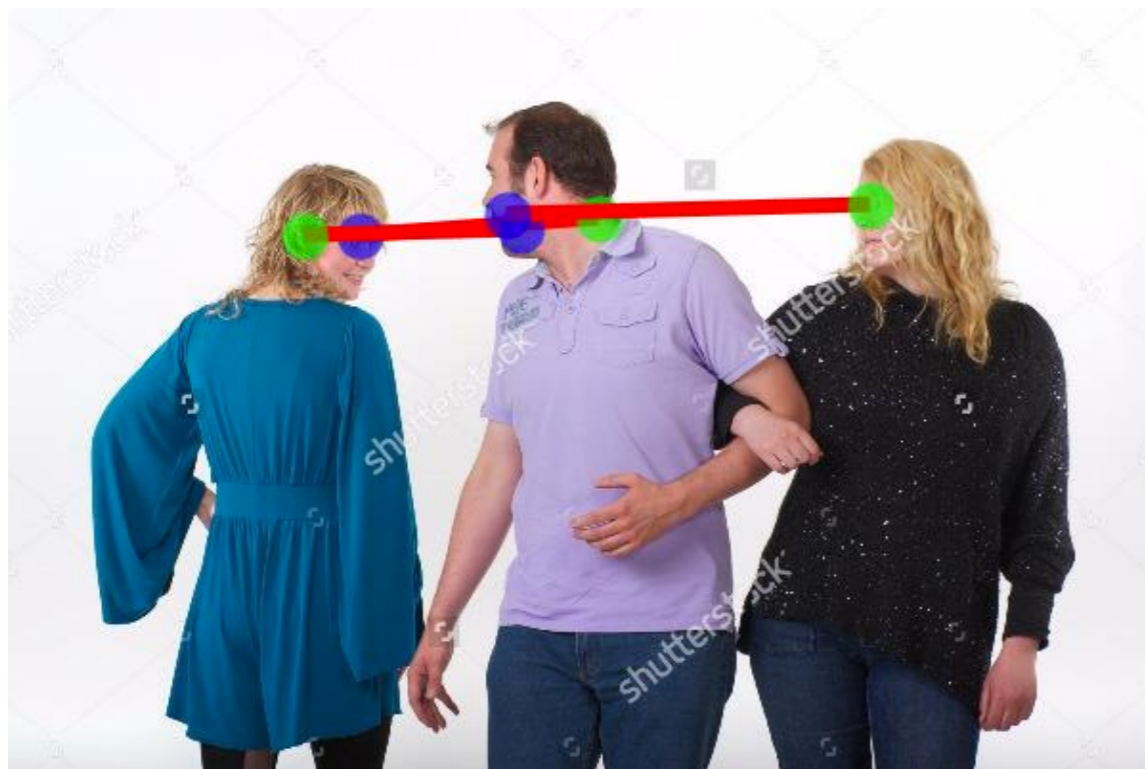
- This paper proposed a deep neural network-based approach for gaze-following and a new benchmark dataset, GazeFollow, for thorough evaluation.
- Given an image and the location of a head, this approach follows the gaze of the person and identifies the object being looked at.

<http://gazefollow.csail.mit.edu/index.html>

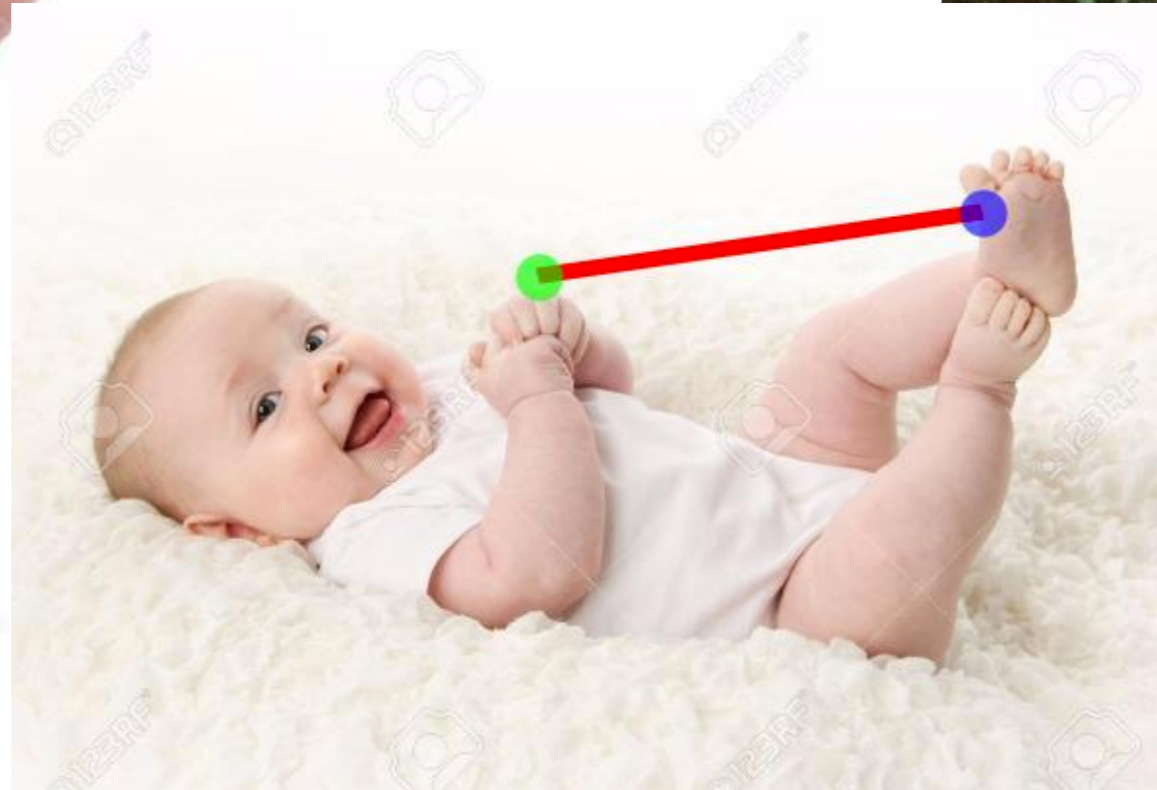
Example of Results



Example of Results



Examples of Failures



Recognition using Visual Phrases

A. Farhadi, M. A. Sadeghi
CVPR 2011

- This paper introduced a dataset suitable for phrasal recognition that uses familiar PASCAL object categories and demonstrate significant experimental gains resulting from exploiting visual phrases.
- 32 classes (24 are objects, 8 are objects with relationships, e.g., “person riding a horse”, “dog lying on sofa”, “person riding a bicycle”, etc.)

Training YOLO with Visual Phrase Dataset

Hardware

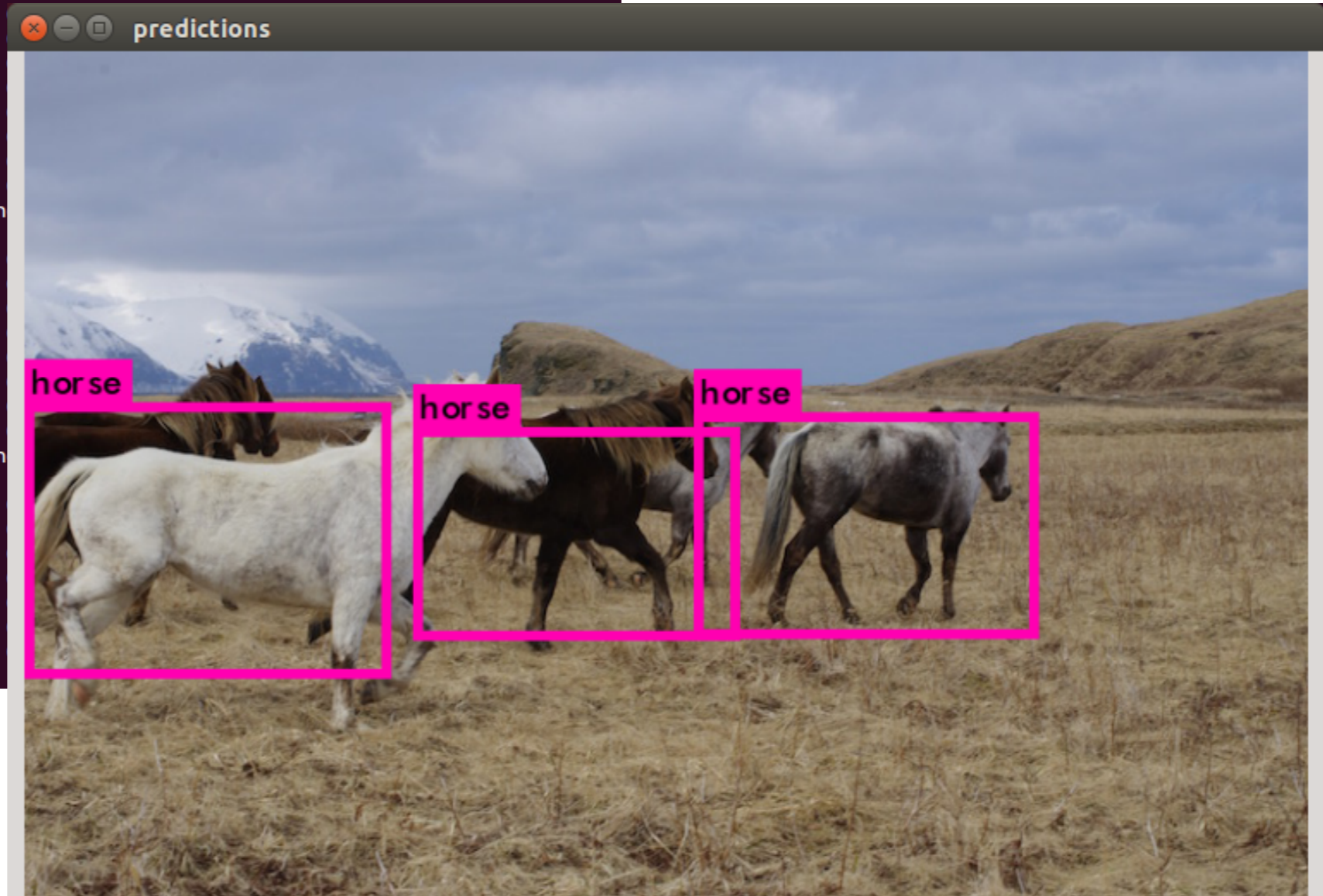
- Processor: Intel® Xeon(R) CPU E5-2687W v3 @ 3.10GHz × 16
- Memory: 31.3 GiB
- Graphics: Quadro M4000/PCIe/SSE2
- System: Linux

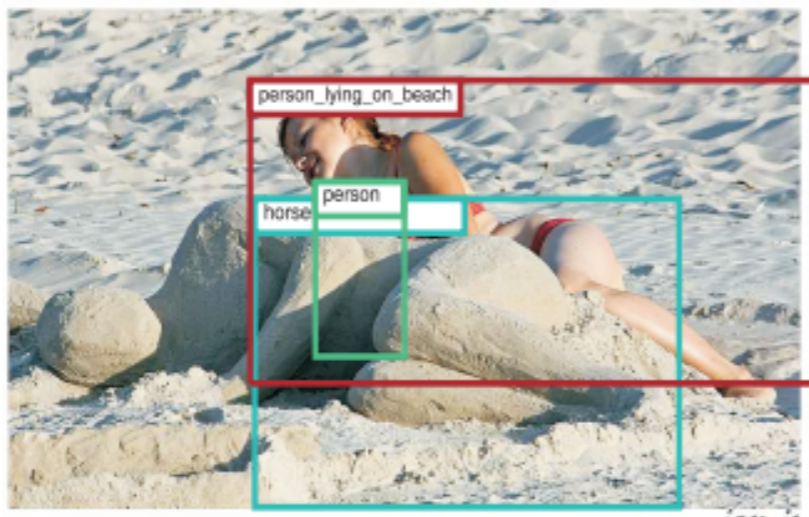
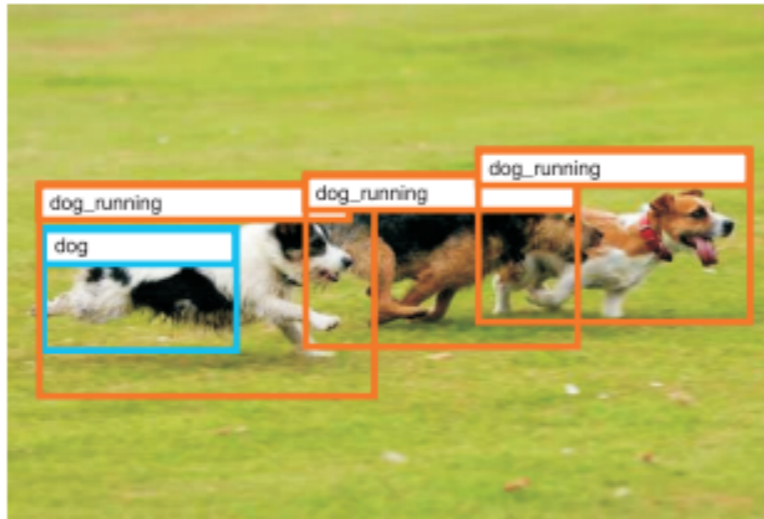
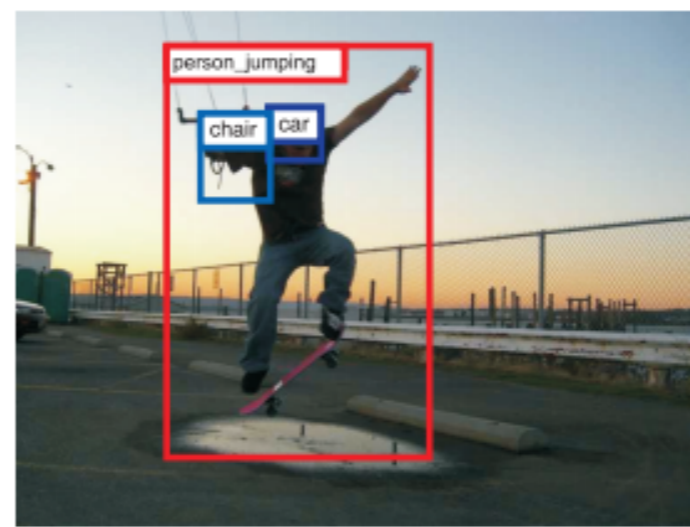
Problems encountered during training on YOLO...

- IOU = nan
- Loss swings a lot
- Loss is not decreasing

Good Results so far... (Loss~=1.05)

```
mw3vision@mw3vision-Precision-Tower-5810: ~/Desktop/yousi/darknet_v1
Region Avg IOU: 0.586235, Class: 0.866988, Obj: 0.525767, No Obj: 0.012165, Avg Recall: 0.722222, count: 18
Region Avg IOU: 0.712217, Class: 0.682732, Obj: 0.342026, No Obj: 0.012202, Avg Recall: 0.944444, count: 18
Region Avg IOU: 0.586832, Class: 0.680766, Obj: 0.459644, No Obj: 0.012023, Avg Recall: 0.789474, count: 19
Region Avg IOU: 0.642747, Class: 0.650967, Obj: 0.520648, No Obj: 0.011549, Avg Recall: 0.857143, count: 21
Region Avg IOU: 0.665929, Class: 0.776251, Obj: 0.424453, No Obj: 0.012614, Avg Recall: 0.869565, count: 23
Region Avg IOU: 0.706905, Class: 0.798644, Obj: 0.441651, No Obj: 0.013032, Avg Recall: 0.931035, count: 29
Region Avg IOU: 0.705068, Class: 0.714973, Obj: 0.397924, No Obj: 0.010469, Avg Recall: 0.937500, count: 16
Region Avg IOU: 0.642405, Class: 0.807201, Obj: 0.445237, No Obj: 0.013630, Avg Recall: 0.958333, count: 24
20428: 0.990649, 1.062736 avg, 0.000010 rate, 10.660382 seconds, 1307392 images
Loaded: 0.000026 seconds
Region Avg IOU: 0.650847, Class: 0.733566, Obj: 0.345749, No
Region Avg IOU: 0.633199, Class: 0.753770, Obj: 0.454775, No
Region Avg IOU: 0.589757, Class: 0.744221, Obj: 0.562708, No
Region Avg IOU: 0.658762, Class: 0.707246, Obj: 0.514026, No
Region Avg IOU: 0.679715, Class: 0.726212, Obj: 0.528710, No
Region Avg IOU: 0.608589, Class: 0.744427, Obj: 0.482185, No
Region Avg IOU: 0.648297, Class: 0.717367, Obj: 0.446127, No
Region Avg IOU: 0.618439, Class: 0.556824, Obj: 0.230561, No
20429: 0.818351, 1.038297 avg, 0.000010 rate, 10.803629 seconds
Loaded: 0.000025 seconds
Region Avg IOU: 0.657171, Class: 0.749841, Obj: 0.571327, No
Region Avg IOU: 0.635502, Class: 0.766137, Obj: 0.396332, No
Region Avg IOU: 0.600545, Class: 0.694716, Obj: 0.306130, No
Region Avg IOU: 0.597652, Class: 0.728104, Obj: 0.495067, No
Region Avg IOU: 0.687146, Class: 0.731649, Obj: 0.603292, No
Region Avg IOU: 0.637581, Class: 0.759726, Obj: 0.485027, No
Region Avg IOU: 0.688901, Class: 0.703209, Obj: 0.451763, No
Region Avg IOU: 0.553692, Class: 0.658690, Obj: 0.409530, No
20430: 0.887437, 1.023211 avg, 0.000010 rate, 10.855416 seconds
Loaded: 0.000025 seconds
Region Avg IOU: 0.676583, Class: 0.658175, Obj: 0.342886, No
Region Avg IOU: 0.561963, Class: 0.786622, Obj: 0.417123, No
Region Avg IOU: 0.643164, Class: 0.709392, Obj: 0.335070, No
Region Avg IOU: 0.630504, Class: 0.833102, Obj: 0.366891, No
Region Avg IOU: 0.703409, Class: 0.678525, Obj: 0.481001, No
Region Avg IOU: 0.615273, Class: 0.657681, Obj: 0.495489, No
Region Avg IOU: 0.538447, Class: 0.837578, Obj: 0.333691, No
```





Thank you!